

# Banking on Foreigners

## The Behavior of International Bank Lending to Latin America, 1985–2000

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## Abstract

Rising international bank financing to developing countries has fueled a debate on the behavior of these claims. The authors analyze claims from seven home (lender) countries on ten host (borrower) countries in Latin America. They find that banks transmit shocks from their home countries and changes in their claims on other countries spill over to individual hosts. However,

lending has become less “indiscriminate” and more responsive to host conditions over time. Responsiveness to the latter becomes less “pro-cyclical” as exposure increases. Finally, foreign bank lending reacts more to positive than to negative host shocks and is not significantly curtailed during crises.

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This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study foreign bank lending. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address [ayaptenco@worldbank.org](mailto:ayaptenco@worldbank.org). Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [mmartinezperia@worldbank.org](mailto:mmartinezperia@worldbank.org), [apowell@utdt.edu](mailto:apowell@utdt.edu), or [ivladkovahollar@imf.org](mailto:ivladkovahollar@imf.org). September 2002. (37 pages)

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## **Banking on Foreigners:**

### **The Behavior of International Bank Lending to Latin America, 1985-2000**

Over the last decade, foreign bank lending to developing countries has risen significantly. According to the Bank for International Settlements (BIS), by the end of 2000, international bank claims -the sum of direct (cross-border) foreign bank lending plus locally funded claims in foreign currency- to the non-bank private sector in developing countries reached a record 421.2 billion dollars, up from 112.2 billion dollars in 1985.<sup>1</sup> To put this figure in perspective, this sum represents 13 percent of total private sector credit in the developing world.<sup>2</sup> The relative importance of international bank claims is larger for countries in Latin America and in developing Europe, where by the end of 2000, they averaged 40 percent of private sector credit.<sup>3</sup>

The importance of foreign bank lending in developing economies has stimulated a lively debate on the stability of such claims. One view is that foreign banks can be a reliable source of credit as, relative to domestic banks, they are less dependent on flighty local deposits and can tap a more stable, diversified international pool of liquidity. The alternative view is that foreign banks are unstable, transmitting shocks from their home countries or from other countries to which they lend, and pulling out at the first sign of trouble in host (borrower) countries.

A number of recent studies have shed light on the behavior of foreign banks. Peek and Rosengren (2000a) find that Japanese bank lending to the U.S. was strongly affected by

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<sup>1</sup> International bank claims refer to the BIS definition of consolidated international claims of BIS reporting banks (internationally active banks in BIS reporting countries) which includes all claims funded in a BIS reporting country but lent in a developing country and claims funded and lent in a developing country in foreign currency through a BIS reporting bank. BIS reporting countries in 2000 are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and US.

<sup>2</sup> Private sector credit refers to credit provided by banks operating in the developing world (both foreign and domestic). Source: IMF, International Financial Statistics.

<sup>3</sup> While impressive, these figures are likely to underestimate overall foreign bank lending to developing countries since the BIS figures on international claims to the private sector encompass cross-border lending plus local lending in foreign currency, but exclude local lending in local currency.

economic events in Japan that, in turn, affected the U.S. commercial real estate sector. Focusing on the behavior of U.S. bank claims (cross-border and locally funded) on a number of regions including Latin America since the mid-1980s, Goldberg (2001) finds that U.S. economic conditions impacted U.S. bank foreign lending. However, she also finds that U.S. bank foreign lending was unaffected by economic conditions in host (borrower) countries and that U.S. banks did not retrench their lending significantly following international financial crises. Dages *et al.* (2000) focus on the local lending behavior of all foreign banks in Argentina and Mexico over the late 1990s. They argue that foreign bank penetration did not increase financial sector instability by showing that foreign banks in Argentina and Mexico exhibited stronger and less volatile loan growth than domestic banks between 1994 and 1999, i.e. during and after the Tequila crisis. Peek and Rosengren (2000b) reach a similar conclusion by examining the behavior of direct (or cross-border) foreign lending and local claims from foreign banks on Argentina, Mexico, and Brazil over the period 1994-1999. Finally, Van Rijckeghem and Weder (2000) examine a panel of BIS data on flows to 30 emerging markets disaggregated by 11 banking centers, to test the role of bank lending in transmitting currency crises. They find that bank exposures to a crisis country help predict bank flows in third countries after the Asian crisis, and to a lesser extent the Mexican 1994 crisis.

The papers discussed above make specific contributions to the debate regarding the behavior of foreign banks. However, each study concentrates on a narrow set of issues and/or covers a limited number of home (lender) and host (borrower) countries. In this study, we employ a comprehensive data set on international bank claims across a wide range of home and host countries over a fifteen year period to revisit some of the issues examined by previous studies, and to explore questions that have not been investigated previously. Our dataset,

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provided by the BIS, covers international bank claims from the seven most important lenders to Latin America (i.e., Canada, France, Germany, Japan, Spain, the UK, and the U.S.) on the non-bank private sector in the ten largest borrowers in the region (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela), over the period 1985-2000.<sup>4</sup>

We focus our study on Latin America for a number of reasons. First, foreign banks have had an active presence in this region since the beginning of our sample and, as noted above, it is now one of the regions with the highest foreign bank participation. Second, while for the region as a whole foreign bank lending has increased in recent years, there are still differences in the extent to which countries depend on this source of funds. For example, international bank lending (cross-border or direct foreign lending and local lending in foreign currency) in 2000 represented more than 55 percent of domestic credit for Argentina and Peru, but it only accounted for 19 percent of domestic credit for Brazil. Third, the region has experienced considerable shocks (positive and negative) during the period of study. Therefore, we think that Latin America's experience over the last 15 years offers a unique opportunity to analyze the determinants of foreign bank lending.

Using this dataset on international bank lending, we attempt to address a wider set of issues than previous studies regarding foreign bank behavior and the 'stability' of their claims. In particular, we seek to answer questions like: (1) do foreign banks transmit shocks from their home countries? (2) Do portfolio adjustments spill over to individual host countries? (3) How do foreign banks respond to positive and negative shocks? (4) Do foreign banks retrench their lending during crises in host countries? (5) How does the level of exposure affect banks' responsiveness to shocks in host countries and, in particular, do banks become more or less procyclical as exposure levels rise? (6) Do increases in local presence by foreign banks (through

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<sup>4</sup> The data on the sectoral breakdown of lending by banks in specific BIS countries to individual borrower countries

brick and mortar operations) affect their reaction to home and host shocks? (7) Is the responsiveness of foreign banks to different types of shocks similar across lenders?

In examining the determinants of foreign bank lending we include not only standard home and host country variables (like growth rates, risk ratings, and interest rates), but also we test for the significance of other factors. For example, models of portfolio allocation show that under standard rules of portfolio choice an unexpected decline in the value of one or more assets may provoke a portfolio adjustment across the board.<sup>5</sup> Applying this result to our context, some shocks might then result in an ‘indiscriminate’ change in the claims on a particular host country and a positive relation between changes in the whole international lending portfolio and changes in claims on any one country. To examine the impact of overall international portfolio changes on the claims to an individual host country, we include as an explanatory variable the change in claims to all countries other than that individual host.

We also investigate whether the extent and type of exposure to a particular country is important in explaining the change in claims. One view might be that the greater the exposure of an international bank to a particular country, the more pro-cyclical its lending behavior might become. This might be the case for example for a bank that is not highly diversified. However, an alternative view is that as a bank’s exposure to a country grows, the bank has more incentives to learn about the home country conditions and hence not to respond so strongly to noisy signals of good or bad future events<sup>6</sup>. We investigate the role of exposure on the responsiveness to shocks in two ways. First, we interact host growth, changes in host risk ratings, and the indicator for crises in host countries with a measure of bank exposure to test whether lenders that are

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is confidential and was provided to us by the BIS with explicit authorization from each of the relevant central banks.

<sup>5</sup> See Schinasi and Smith (1999).

<sup>6</sup> For example, Calvo and Mendoza (2000) argue that as investors become more diversified, and hence their average exposures in any particular asset decrease, they have reduced incentives to learn about the fundamentals of each

highly exposed to a country react less to domestic shocks in that country. Second, because in the second half of the 1990s there was an increase in brick and mortar operations of foreign banks in Latin America, we examine whether there are differences in the behavior of foreign banks over time, as the nature of their exposure to this region changed.

Finally, we incorporate specifications that allow us to test for two types of asymmetries in the responsiveness of foreign bank lending to shocks. First, we test whether all lenders respond similarly to shocks by testing whether it is valid to pool across lenders. Secondly, we allow the reaction of foreign banks to shocks to depend on whether these are positive or negative.

Our empirical estimations allow us to corroborate, for a larger combination of home and host countries, over a relative long period of time, some of the results found by other studies. In particular, like Peek and Rosengren (2000a) and Goldberg (2001), we find that home country conditions (i.e., conditions in the country where foreign banks' headquarters reside) are important in explaining changes in private sector claims. Also, consistent with other studies we find that foreign bank lending does not retrench during crises in the host countries (see Dages *et al.* (2000), Peek and Rosengren (2000b), Goldberg (2001)).

More importantly, our work yields interesting new results. First, while foreign banks across lender countries appear to react similarly to host country shocks, the magnitude of their reaction to shocks in their own countries is different. Second, lending to individual host countries is positively associated with changes in claims to all other countries. Third, the higher the overall exposure of home country banks to a given host country, the less responsive are those banks' claims to host country shocks. Fourth, as brick and mortar operations become more important

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asset and hence react more strongly to 'signals' on expected return or risk. This suggests that as foreign banks become more exposed to a particular host country, they react less to changes in host country variables.



over time, foreign banks' reaction to external and portfolio shocks is diminished. Finally, we uncover asymmetries regarding foreign banks' response to positive and negative shocks, given that banks appear to respond more to the former than to the latter.

The rest of this paper is organized as follows. Section II discusses the data used in this paper. Section III presents the empirical methodology. Section IV describes the empirical results. Finally, Section V concludes.

## **II. Data and Descriptive Statistics**

Foreign banks provide financing to developing countries in at least two ways. First, they provide direct (or cross-border) financing from their headquarters and affiliates outside the developing world. Second, they establish operations (branches and subsidiaries) in developing countries and provide financing with local funding. In this paper we analyze the behavior of 'international bank (or financial) claims' on the non-bank private sector as defined by the BIS.<sup>7</sup> In other words, our main variable of study includes direct foreign lending (from outside host countries to local institutions) in any currency plus local claims in foreign currency from subsidiaries or branches of BIS reporting banks from seven home countries (i.e., Canada, France, Japan, Germany, Spain, UK, and US) to the ten largest economies in Latin America (namely, Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela) over the period 1985-2000. Claims extended from a local subsidiary or branch but funded by another part of the same BIS reporting bank, located outside of the host country, are consolidated. The principal balance sheet items included in the claims that we study are loans

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<sup>7</sup> For a full description of this data see the BIS "Guide to International Banking Statistics", July 2000.

and advances to the private sector as well as holdings of securities and participations.<sup>8</sup> The data frequency is annual.

This definition of foreign lending represents a compromise. On the one hand, we might have chosen to work with a narrower definition including only the direct foreign lending from outside our host countries. However, this would have left out completely the growing trend of foreign banks investing in brick and mortar operations in our host countries and extending loans locally. On the other hand, we could have attempted to include all local claims including those funded in local currency.

Unfortunately, the BIS does not report data on local claims in local currency to the non-bank private sector (it only reports total local claims in local currency including those to the public sector). Furthermore, there are a number of reasons why including these claims might not be appropriate. First, it is not clear how much such claims add to the ‘exposure’ of a foreign bank. Local currency deposits that fund local lending of foreign banks’ brick and mortar operations can be thought of as a hedge against currency and possibly even against sovereign risks. Second, we wish to focus on those aspects of foreign bank operations that are distinct. The local currency operations of foreign banks are the operations most likely to resemble those of local banks. As we are interested in assessing the behavior of banks that are characterized by access to an international pool of liquidity, including claims extended in local currency does not appear appropriate for that goal. For these reasons, we adopt ‘international financial (or bank) claims’ as a reasonable measure of foreign bank lending and note that this definition has moreover become something of a standard in the industry<sup>9</sup>

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<sup>8</sup> Claims are not adjusted to consider guarantees and collateral. While at first hand this might seem to overestimate the exposure that banks have to certain countries, it is not clear that the quality of the collateral and guarantees can be compared across countries. Therefore, it is not obvious that greater guarantees in a country with poor legal systems translate into less exposure relative to other countries where such guarantees are not offered.

<sup>9</sup> It might also be argued that local foreign currency deposits are more likely to be owned by non-residents and hence should be included as part of the ‘international pool of liquidity’ available to foreign banks whereas local currency

Also, due to a number of factors we limit our study to claims on the non-bank private sector as opposed to total claims.<sup>10</sup> First, we want to abstract from political or strategic considerations that might affect lending to governments. Second, it is likely that while the vast majority of private sector claims are loans, claims on the public sector are mostly more liquid bonds. End of year stocks for the latter may then not necessarily be representative of exposure and the BIS data does not control well for credit risk mitigation techniques such as derivatives. While this might also be a problem for private sector claims, we feel that this problem is minimized in this case.

Figure 1 shows the evolution of real claims to the non-bank private sector from banks in the seven BIS-reporting lender countries to the ten borrowing countries in Latin America. Following the debt crisis in Latin America, claims to the region declined in real terms between 1985 and 1990. However, over the 1990s, real claims rebounded rising rapidly and surpassing the 100 billion dollars mark by the end of the decade. As a percentage of Latin America's domestic private credit, the importance of foreign bank financing from the seven BIS-reporting countries declined over the second half of the 1980s (see Figure 2). However, between 1990 and 2000, the ratio of private sector claims from banks in the seven BIS-reporting countries to private sector credit in Latin America rose from 12 to 28 percent.

Figure 3 illustrates the exposure of BIS reporting banks from the seven home reporting countries to Latin America. In the early to mid-1980s, claims to Latin America accounted for more than one third of the overall portfolio of international financial claims of the seven BIS-reporting countries. As a result of the debt crisis, foreign banks diversified away from the region

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local claims/deposits are less likely to be owned by non-residents. Finally, it is also worth noting that, although the local currency local claims of BIS reporting banks have been growing in Latin America, they remain well below 50 percent of total foreign claims (i.e., total claims to the private and public sector) and so adopting the definition of international financial claims as described in the text captures the majority of foreign bank lending operations.

over the second half of the 1980s. Over the last decade, exposure to Latin America has remained below the 1980s levels, but has risen steadily over time, reaching 17 percent in 2000.

Among the individual countries in Latin America, as expected, the largest economies in the region attract most of the international bank claims (see Figure 4). On average between 1985 and 2000, Brazil received 27 percent of all foreign bank claims directed to the non-bank private sector in the region. Mexico received 25 percent of such claims and Argentina 21 percent. Both Chile and Venezuela accounted for less than 10 percent of these claims.

Figure 5 illustrates the importance of the individual home country bank lenders to the region. Among the seven top lending countries to the region, the U.S., France, Germany and recently, Spain have been the most important sources of funds throughout the sample. The U.S. has been the most consistent lender to the region, accounting for more than 20 percent of all claims to the non-bank private sector in this region throughout the entire period 1985-2000. German lending to Latin America has hovered between 20 and 15 percent of all lending to this region. While French banks accounted for more than 35 percent of all lending to Latin America in 1990, this figure dropped to less than 15 percent in the year 2000. Spain has emerged as the lender with the fastest growing share of claims to this region, accounting for less than 5 percent of claims in 1985 but exceeding 20 percent of total claims to the non-bank private sector in 2000.

Figure 6 shows the exposure of foreign banks from BIS reporting countries to Latin America (i.e., the ratio of claims by each lender to the region over total international claims for each lender) over the period 1985-2000. Throughout this period, Spain and the U.S. were the lenders with the highest exposure to this region. Spanish exposure averaged 50 percent of its total international private claims, while for the U.S. this figure was 35 percent. However, the

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<sup>10</sup> The BIS also gathers data on claims on banks, however, we focus on non-bank claims because the former include claims on the official monetary authorities and on public banks and we want to study private sector claims.

trend in exposure across these two countries is very different. While U.S. exposure has remained fairly constant throughout the period 1985-2000, Spanish exposure has increased significantly from less than 40 percent in the early 1990s to more than 68 percent by 2000.

Having described the pattern and importance of foreign bank lending to Latin America, Table 1 and 2 provide some descriptive statistics to illustrate the stability of this source of financing vis-à-vis real domestic credit.<sup>11</sup> Table 1 compares the growth of international bank claims and of domestic credit during tranquil and crisis periods in the host countries. The latter refer to banking, currency or twin crises.<sup>12</sup>

According to Table 1, both international and domestic credit decline during host country crises, but while the average growth of BIS lenders' claims on Latin America remains positive, real domestic changes are, on average, negative.<sup>13</sup> At the same time, neither foreign nor domestic credit seems to have declined significantly (when compared to tranquil periods) during recent international crises outside the host countries we focus on. Furthermore, Table 2 explicitly compares the behavior of international bank claims against real domestic credit. This table shows that domestic credit growth exhibits significantly higher volatility (as measured by the standard deviation of changes in credit) than claims from BIS reporting banks in these seven home countries, both during host crisis, and during tranquil periods.<sup>14</sup> There is some evidence of transmission of portfolio shocks: the volatility of BIS claims is higher than the volatility of domestic credit during the Asian crisis, although as can be seen from Table 1 only the U.S. reduced its claims on Latin America during that period. In fact, when we consider the Russian

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<sup>11</sup> See footnote 2.

<sup>12</sup> Table A.1 lists these episodes for each of the ten Latin American countries in our sample and provides the definition and sources used to identify them.

<sup>13</sup> Rather than comparing the behavior of domestic credit vis-à-vis foreign lending during all types of crises combined, Table A.2 reports similar statistics distinguishing between currency, banking, and twin crises. In terms of percentages, domestic credit falls by more, on average, than foreign bank lending during banking and twin crises. The reverse is true during currency crises. However, as shown in Table A.3, these differences in means are not statistically significant.

crisis episode, the volatility of BIS claims is significantly lower than the volatility of domestic credit. In general these statistics suggest that there is no systematic evidence that international financial claims are less “stable” than credit originated locally. However, this is only partial and descriptive evidence and needs to be verified with a more careful empirical approach, which we undertake next.

### III. Empirical Methodology

In this section we discuss the econometric model that we employ to analyze the behavior of foreign bank lending. In particular, we draw on previous literature on international bank behavior and on the extensive literature on capital flows that estimates reduced form models that consider both *home* (lender) or *pull* and *host* (borrower) or *push* variables.<sup>15</sup> However, we also add variables motivated by recent theory. In particular, we add extra variables to investigate the role of portfolio shocks as well as the impact of exposure on banks’ responsiveness to shocks. Hence the general econometric model can be represented as follows<sup>16</sup>:

$$\begin{aligned} \% \Delta \text{Claims}_{i,t}^j = & \alpha_0^j + \alpha_{1,i}^j + \beta^j \text{Home Factors}_{i,t-1} + \lambda^j \text{Host Factors}_{i,t-1} + \\ & \delta^j (\text{Host Factors}_{i,t-1} * \text{Exposure}_{i,t-1}^j) + \gamma^j (\% \Delta \text{Oprivateclaims})_{i,t-1}^j + \varepsilon_{i,t}^j \end{aligned} \quad (1)$$

where  $j=1$  to 7 identifies banks from each of the seven BIS home (lender) countries,  $i=1$  to 10 indicates each individual Latin American host (borrower) country and  $t=1985$  to 2000 refers to

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<sup>14</sup> Table A.3 shows that the volatility of domestic credit is statistically higher than that of foreign bank lending for currency and twin crises.

<sup>15</sup> See Goldberg (2001), Peek and Rosengren (2000a) on banks and see Calvo, Leiderman, and Reinhart (1993), Chohan, Claessens, and Mamingi (1998), Fernandez-Aries (1996), and Hernandez, Mellado, and Valdes (2001) on capital flows.

<sup>16</sup> Alternatively, we could estimate a separate regression for each home (lender) country, using Zellner’s Seemingly Unrelated Regressions method, to account for contemporaneous cross-equation correlation in the error terms. As a robustness check, we estimated separate equations for each lender and compared those results to the results from estimating Equation 1. The differences are not significant, and, furthermore, the drawback to the SUR method is that it forces our data into a balanced panel, significantly reducing the number of observations.

the time period considered.<sup>17</sup>  $\% \Delta Claims_{i,t}^j$  is the percentage change in real claims from banks in home country  $j$  to the private non-bank sector in host country  $i$  between  $t-1$  and  $t$ . As explained above, we use consolidated international financial claims as defined and supplied by the Bank for International Settlements.

Among the host country variables, we include the real GDP growth, the change in country risk rating, and a crisis indicator. Growth figures come from the IMF International Financial Statistics. The credit rating we include is reported by Institutional Investor Magazine.<sup>18,19</sup> The crisis indicator is a dummy variable which equals one if host country  $i$  had a crisis (banking, currency, or both) in a given period. A chronology of crises in the region was obtained from Caprio and Klingebiel (1999) and Bordo et al. (2001).<sup>20</sup> We interact these variables with a measure of exposure to examine the responsiveness to host shocks as exposure increases. Exposure represents the ratio of country  $j$  claims on country  $i$  over the total claims extended by country  $j$ . This ratio is calculated from the BIS consolidated banking statistics. Finally, because foreign bank claims are reported in dollars, we also control for changes in the exchange rate vis-à-vis the dollar for each home and host country.

In principle, given the importance of foreign lending to the region, changes in such claims could affect host country right hand side variables (e.g.: host real GDP growth, timing of crises, and credit rating) implying a potential endogeneity problem. We believe that the concern regarding endogeneity is perhaps overstated since our estimations focus on bilateral lending

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<sup>17</sup> The U.K. is the exception where data on private sector claims are only available for the period 1993-2000.

<sup>18</sup> Institutional Investor Magazine publishes a semi-annual survey of country credit ratings. The magazine surveys bankers, money managers, and economists around the world on their evaluations of the relative risk of countries to which they lend. On the basis of their responses, they produce a rating from 0 to 100, with higher numbers representing a better repayment capacity.

<sup>19</sup> In alternative specifications that are not shown but are available upon request we replace the credit risk rating for a number of macro variables (government deficit, current account deficit, real exchange rate appreciation, among others) that serve as proxies for country risk. Given that results were very similar, we prefer this more parsimonious specification.

<sup>20</sup> See Table A.1 for a list of crises in each host country during 1985-2000.

flows (i.e., changes in real claims from home country  $j$  on host country  $i$ ) and no bilateral relationship seems important enough to warrant such concern. Tables A.4 and A.5 in the Appendix illustrate that when expressed as either a percentage of domestic credit or as a percentage of total BIS lending to each host, these bilateral lending shares are relatively small. Nonetheless, as a precaution, all right hand side variables are lagged one period.

Home real GDP growth and real interest rates are included to control for home country shocks. Both of these variables come from the IMF International Financial Statistics. Finally,  $\Delta Oprivateclaims^j_{t-1}$  is the lagged change in private claims from banks in country  $j$  to all (non-BIS reporting) countries other than  $i$  between period  $t-1$  and  $t$ . This variable is calculated on the basis of the BIS consolidated banking statistics and is intended to examine the impact of spillover effects from portfolio changes in other countries.

Equation (1) above includes both home and host country individual effects  $\alpha^j_0$  and  $\alpha^j_1$  and allows the coefficients to vary depending on the home country or lender (this explains the  $j$  superscript in all coefficients).<sup>21</sup> However, it is possible that different lenders react similarly to host and even home country shocks. Below, we test different restricted versions of equation (1) to arrive at a final specification that constrains the impact of certain variables to be the same across home and host countries.

Home country economic conditions could have both a negative or positive impact on foreign bank lending to host countries. On the one hand, adverse economic conditions and a lack of profit opportunities at home could encourage banks to lend abroad. If this were the case, we would expect to find a negative coefficient on home growth. On the other hand, a recession at home could lead to a deterioration in the capital of foreign banks and an overall retrenchment in lending at home and abroad. We therefore remain agnostic regarding the sign of this variable.



While we are interested in whether our results are in line with those obtained by other researchers, given our cross-country dataset and analysis we are also interested in whether different home country banks behave in a similar fashion or not with respect to home growth.

Low real interest rates in lender countries tend to signal periods of excess liquidity and portfolio theory would suggest that this would increase banks' willingness to lend via riskier, higher interest rate loans to developing countries. During these episodes, foreign banks are more likely to search for lending opportunities abroad. Therefore, we expect home real interest rates to have a negative impact on the change in claims.

Foreign banks are less likely to extend credit abroad if the riskiness of the host country worsens. An increase in risk (lower host growth or a rating downgrade) should then lead to a rebalancing within the loan portfolio away from the affected country. Hence, we expect to find a positive coefficient on growth and rating.

A priori, we might expect banking, currency, and/or twin crisis episodes in a particular host country to be accompanied by a decline in foreign bank lending, since these episodes are typically associated with a fall in the capacity of crises-stricken countries to repay their obligations. On the other hand, foreign banks might view crises in host countries as an opportunity to expand their operations and increase their market share locally. Also, crises might coincide with a deterioration in economic fundamentals like GDP growth making their impact indistinguishable from other cyclical downturns. In other words, it is possible that the crisis dummy in our regressions may not be significant because the impact of these episodes is being captured by changes in GDP growth. This in turn would suggest that crises are not perceived as different from any other cyclical downturn in output.

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<sup>21</sup> We could have also allowed coefficients to vary by host country  $i$  but since host country dummies were not individually significant we decided against this.

As we discussed above, shocks to the value of an asset or assets within the lending portfolio of foreign banks, may result in a reduction (or increase, depending on the type of shock) across all risky claims. Adapting this idea to our application, we should then find a positive and significant coefficient relating the change in claims on country  $i$  from country  $j$  banks to the change in all other claims of country  $j$  banks.

Following Calvo and Mendoza (2000), if country  $j$  banks have a higher exposure to country  $i$ , then they should have greater incentives to learn and hence should provide more stable financing. To test this proposition, we interact the host country variables (the change in rating, the real growth, and the crisis indicator for host country  $i$ , respectively) with the exposure of country  $j$  banks to country  $i$ . A priori, if indeed higher exposure is translated into more stable financing, we expect these interaction terms to be opposite in sign to that of the host country shock. For example, we expect the interaction between host growth (or changes in host rating) and exposure to be negative and the interaction between host crisis and exposure to be positive.

To deepen our understanding of the determinants of foreign bank lending, we estimate some modified versions of equation (1). First, we examine whether banks' responsiveness to shocks depends on the type of shock by allowing the coefficients in equation (1) to vary depending on whether the change in host real GDP, host rating, and the change in all other claims is positive or negative<sup>22</sup>. Also, because in the late 1990s, foreign banks increased their lending on-shore relative to the previous decade and this might have affected how banks respond to home and host shocks, we estimate equation (1) over both sub-samples (1985-94) and (1995-2000) and examine whether banks' responsiveness to home and host variables changed over this period.

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<sup>22</sup> We do not investigate positive/negative home growth shocks, because for the seven home countries we focus on, there have been virtually no years in which home growth has been negative.

Finally, in order to summarize the importance of home country, host country, and portfolio shocks, we report for each estimation the percentage of the variance of claims explained by each of these factors. To the extent that home country and portfolio shocks, dominate host country shocks, we would be inclined to conclude that foreign banks facilitate the transmission of external shocks.

#### **IV. Empirical Results**

Table 3 presents the unrestricted version of equation (1), where the coefficients on all variables are allowed to differ across home or lender countries. In general, all banks respond positively to improvements in host country economic conditions, such as an increase in real GDP growth and an upgrade in the credit risk rating. In particular, these factors are significant in the case of Japan, Spain, and the U.S.. Also, foreign banks tend to increase their lending abroad when opportunities at home dwindle. This is illustrated by the negative sign on home growth across all lenders, except Japan. Home growth is negative and statistically significant for France and the US. Tighter monetary conditions at home result in less lending abroad, as shown by the negative coefficients on home real interest rates. Yet, this variable appears to be significant only for Japan. Like Goldberg (2001), we find that controlling for other factors reflecting host economic conditions, crises in host countries do not lead to reductions in lending across the board. The sign on this coefficient varies depending on the lender or home country, but this variable is never significant. In general, a shock to the rest of the portfolio is transmitted to individual host countries in Latin America. This is illustrated by the positive coefficient on all other claims. Finally, it seems that in general, the higher the exposure of a lender to a given host country, the smaller the reaction to host country shocks, as evidenced by the mostly negative coefficient on the interaction terms between host growth and host credit rating with exposure.

A cursory look at the results from the unrestricted model suggests that banks in home or lender countries respond similarly to certain shocks, not just in sign but also in magnitude. Thus, Table 4, reports F-tests for a number of cross-lender restrictions. To summarize, we find that banks in home or lender countries respond similarly to host country shocks, exchange rate changes, and portfolio shocks. In other words, we cannot reject the joint hypotheses that the coefficients on host growth, on the interaction between host growth and exposure, on the change in ratings, on the interaction between change in ratings and exposure, on the crisis dummy, on the interaction between crisis and exposure, and finally, on the host country dummies are the same across home or lender countries. Furthermore, we also cannot reject the hypothesis that exchange rate changes affect all lenders in the same way.

Table 5 shows the results from estimating the selected restricted model (i.e., model (4.3) in Table 4) for the overall sample 1985-2000 and for the sub-samples 1985-94 and 1995-2000. The first column of Table 5 (model 5.1) presents our preferred model for the whole sample period. Focusing on the subset of home country ( $j$ ) variables, we find that France, Germany, Spain, the UK, and the U.S. reduce claims in response to increased profit opportunities at home (i.e., in response to higher home growth), but only the coefficient on U.S. home growth is significant with a negative sign. Home growth has a positive and significant effect for Canada and Japan. With the exception of Germany and the UK, the home real interest rate has the expected negative impact. This variable is statistically significant for Canada, Japan, and the US.

Among the subset of host country variables, we find that the coefficient on host growth is positive and significant, showing support for the idea that foreign banks do respond to host country growth, increasing and decreasing credit over the cycle. However, we also find strong support for a “Calvo-Mendoza” effect, such that the higher the exposure of home country  $j$  to host country  $i$ , the less pro-cyclical (the less sensitive to host growth) is foreign bank lending.

The coefficient on host credit rating is positive and significant, while the interaction term of rating with exposure is negative, but not significant. Controlling for host country growth and risk rating, the crisis variable is not significant. Therefore, it does not appear that crisis episodes cause any further decline in foreign bank claims.<sup>23</sup> Finally, the coefficient on private claims on other countries is positive and significant, indicating that changes elsewhere in the portfolio of lending banks might affect individual host countries.

Between 1985-2000, foreign bank penetration (the participation of foreign banks in the local banking market) in Latin America increased significantly. Indeed while locally funded foreign bank loans (in local or foreign currency) accounted for some 15 percent of total lending by banks operating in the region in 1995, this figure had risen to 38 percent by 2000<sup>24</sup>. We investigate whether the responsiveness of foreign banks changed as their brick and mortar investment (or local claims) in these countries increase by comparing the estimates of our model over the two sub-samples, namely, 1985-94 and 1995-2000.

Over the period 1985-1994, host real growth plays a significant role in explaining movements in real claims. While the coefficient on home country real interest rates remains negative and significant, there is not much evidence that claims respond to home growth. The coefficient on the dummy variable capturing crises in the host country appears large and negative, but is insignificant.<sup>25</sup> Finally, the coefficient on the change in real claims on all other countries is both positive and significant indicating that changes in claims on specific host countries are affected by across the board changes in the international portfolio.

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<sup>23</sup> This result is independent of whether we include the crisis dummy contemporaneously instead of lagged (see Table A.6) and it also holds when we discriminate between banking, currency, and twin crises (see Table A.7).

<sup>24</sup> Salomon Smith Barney (2000).

<sup>25</sup> This result continues to hold over the period 1985-1994 even when we include the crisis dummy contemporaneously or if we include separate dummies to identify banking, currency, and twin crises (see Tables A.6 and A.7).

Over the period 1995-2000, which coincides with the increase in brick and mortar operations of foreign banks in the region, we find that banks do not seem to pull out from host countries in crises. The coefficient on the crisis dummy is smaller in magnitude, and also insignificant.<sup>26</sup> Also, over this period, in contrast to the findings for the previous period, there is no significant evidence that changes in claims to other countries are transmitted to the host countries we focus on. Changes in credit ratings have a positive and significant impact on foreign bank lending, but foreign banks' responsiveness to this variable decreases as the degree of exposure rises.

Not only is it possible that foreign banks respond differently to home and host country economic conditions as the type of exposure to the region changes, but it is also feasible that their reaction depends asymmetrically on the nature of the shocks. In order to test this formally, we discriminate between positive and negative changes in host GDP growth, host credit ratings, and in all other claims.<sup>27</sup> Table 6 presents the results from this estimation for the overall sample, 1985-2000. Note that we define negative changes in absolute terms so that we can interpret a negative coefficient as stating that larger drops in the variable in question lead to a decline in the growth of claims.

The results in Table 6 have some interesting interpretations. Specifically we find that while positive changes in host real GDP growth continue to have a positive and significant sign, the coefficient on negative host GDP growth is negative but not significant. The same is true for credit ratings: claims respond to upgrades and not to downgrades in credit ratings. However, the higher the exposure to the host country, the smaller the response of claims to upgrades in credit ratings, as indicated by the significant and negative coefficient on the interaction term between

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<sup>26</sup> As with the findings for the overall sample and the pre-1995 period, the results do not change if we enter the crisis dummy contemporaneously or if we analyze the impact of banking, currency, and twin crises, separately (see Tables A.6 and A.7).

upgrades and exposure. On the other hand, both positive and negative changes in other country claims are statistically significant; negative changes have a much stronger impact on private claims than do positive changes, and that difference is statistically significant at standard significance levels. One interpretation of these results is that banks are more discriminate in the 'good times' than in the 'bad times'. In other words, during periods of positive growth, banks appear to increase claims more related to individual host country growth performance whereas in periods of negative growth, banks seem to retrench lending more across the board than in accordance with individual country factors.<sup>28</sup>

A useful way of summarizing the importance of home, host, and portfolio shocks is provided in Table 7, which details the percentage of the variance in private claims explained by each of these groups of variables. In other words, for each group of variables, we compute the increase in the R-squared, as a proportion of the total variance of the percentage change in claims explained by all variables. We rescale the percentage explained by each group of variables so that the sum of all three adds to 100.

We find that while changes in claims on all other countries explain a significant amount of the variance in the dependent variable (21%) in the 1985-1994 period, they practically play no role in explaining changes in private sector claims on host countries in Latin America during the later period. In addition, while home country conditions explain a large proportion (62%) of the variance in private claims during the 1985-1994 sub-period, their importance declines significantly in the latest sub-period. Host country conditions explain between 20 and 50 percent of the variance in claims in both periods, and, overwhelmingly, it is positive changes (positive

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<sup>27</sup> See footnote 22.

<sup>28</sup> One possible interpretation of this result is that investors facing margin calls when a negative shock takes place in a particular country might engage in an indiscriminate reduction in their international portfolio. We thank Enrique Mendoza for this observation.

growth and credit rating upgrades) that play the most significant role in explaining the changes in international financial claims.

## V. Conclusions

In this paper, we employ a comprehensive dataset to address a number of questions related to the stability of foreign bank claims. The data set is rich in two dimensions. From a cross-sectional perspective, we capture the behavior of banks from different home countries. Banks from these countries vary in both their degree of exposure and in their importance as a source of credit to Latin America and to the particular host countries we analyze. From a time-series perspective, our dataset allows us to focus on periods of tranquility as well as periods of crisis; on periods of lower foreign bank penetration and periods of strong “mortar and brick” (local) presence. With this more general dataset, we confirm particular previous findings in the literature, but more importantly we offer a set of new results.

In particular, we find that banks transmit shocks from their home countries and changes in their claims on other countries spill over to individual hosts. However, both the regression results and the variance decompositions over the sub-periods 1985-1994 and 1995-2000 indicate that foreign bank lending has become less “indiscriminate” and more responsive to host conditions over time. The responsiveness to the latter becomes less “pro-cyclical” as exposure increases. Finally, foreign bank lending reacts more to positive than to negative host shocks and is not significantly curtailed during crises.<sup>29</sup>

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<sup>29</sup> It would be interesting to consider if the Argentine crisis, which unfolded as we wrote this paper, is in line or might change the nature of our results. Recent (Q1 2002) BIS data indicate almost a 35% fall in international private sector claims to Argentina over the previous 12 months as growth has dived and, given default, the ratings variable collapsed. However, as BIS (2002) points out, a substantial part of this fall is a result of the forced “pessification” of local dollar lending. The BIS data does not disaggregate the impact of this exceptional event from a real cancellation of claims implying that it is impossible to compare the model’s predictions with reality in this case. It is also interesting to point out that, more recently, the vast majority of foreign banks (the only exceptions



We conclude that while foreign banks have the potential of importing home country shocks and shocks from elsewhere through overall shifts in their international portfolio, on balance they continue to lend during crises, they have become more discriminate over time, and become less pro-cyclical as their exposure levels to a particular host country rise.

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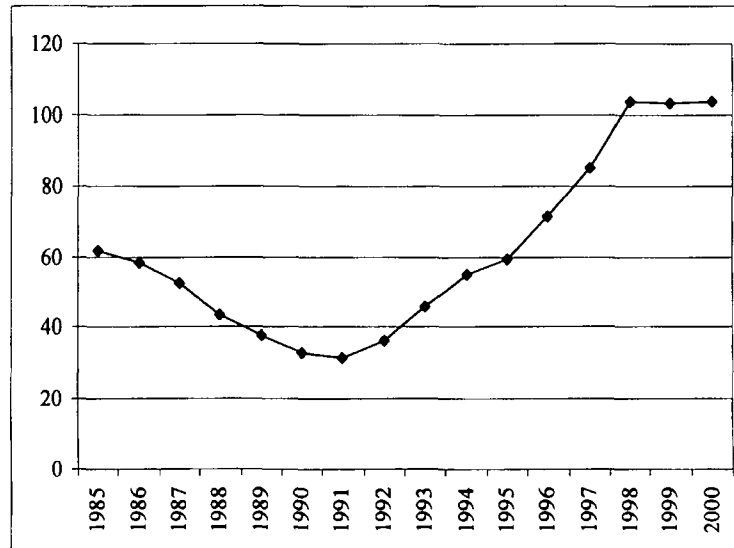
being Scotia Bank of Canada and Credit Agricole of France that were suspended) have injected new funds into their local affiliates consistent with the Central Bank's assistance strategy.

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**Figure 1:**

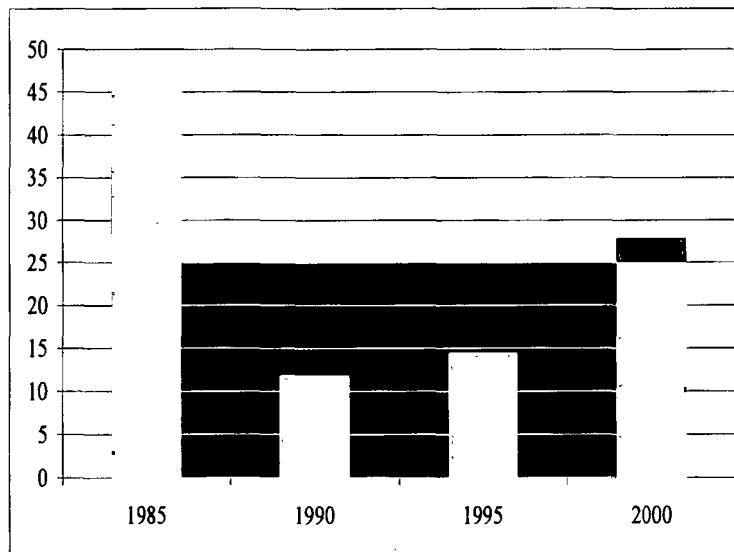
**Real lending by banks from 7 BIS-reporting countries to the private sector in Latin America<sup>30</sup>**  
**(in billions of dollars)**



Source: authors' calculation based on BIS data.

**Figure 2:**

**Private sector claims from banks in 7 BIS-reporting countries to Latin America<sup>31</sup>**  
**As a share of the region's domestic credit to the private sector (%)**

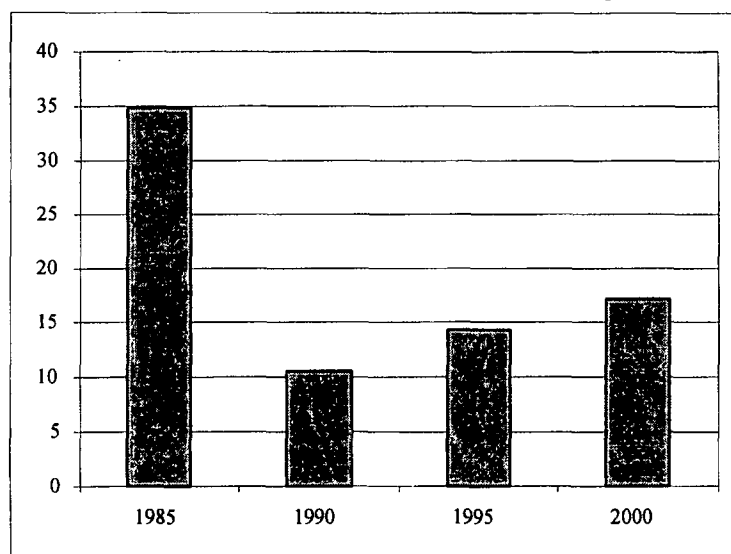


Source: authors' calculation based on BIS data.

<sup>30</sup> The 7 BIS lender countries are: Canada, France, Germany, Japan, Spain, UK, and US. Latin America here refers to the ten largest countries in the region: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, and Venezuela.

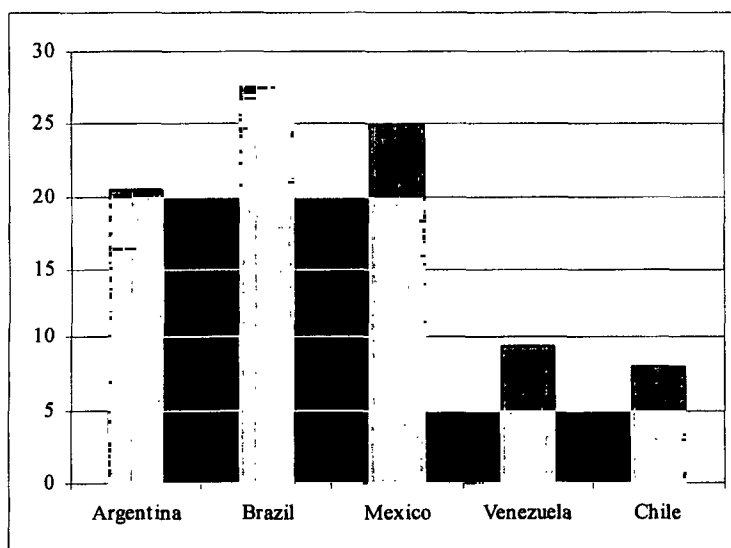
<sup>31</sup> See footnote 30.

**Figure 3:**  
**Private sector claims from banks in 7 BIS-reporting countries to Latin America<sup>32</sup>**  
 (% of total private sector claims by 7 BIS-reporting countries)



Source: authors' calculation based on BIS data.

**Figure 4:**  
**Average share of lending from BIS 7 banks to countries in Latin America<sup>33</sup>**  
 (% of all lending by BIS 7 banks to Latin America)

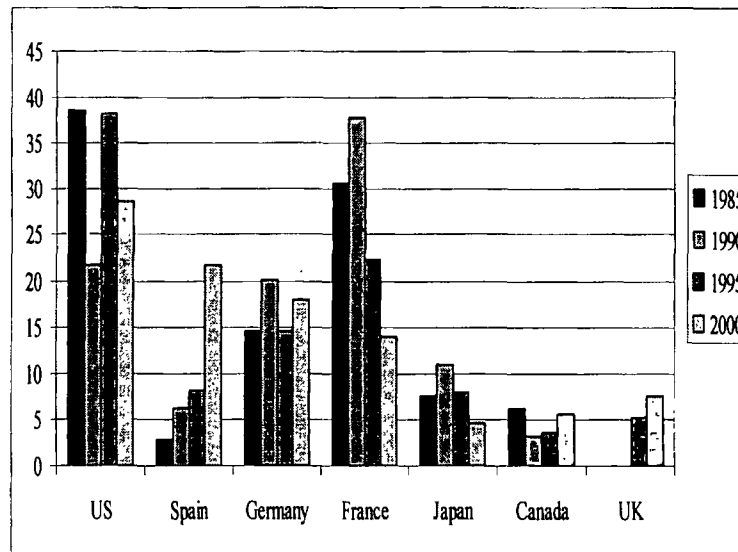


Source: authors' calculation based on BIS data.

<sup>32</sup> See footnote 30.

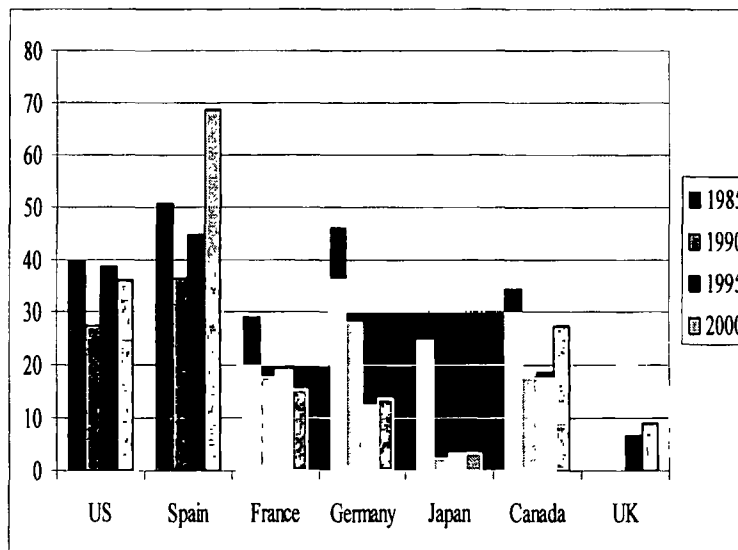
<sup>33</sup> See footnote 30.

**Figure 5: Private sector claims on Latin America<sup>34</sup>**  
 (% of 7 BIS-reporting countries' private sector claims on Latin America)



Source: authors' calculation based on BIS data.

**Figure 6:**  
**Private sector claims from banks in 7 BIS lenders on Latin America<sup>35</sup>**  
 (As a percentage of each lender's total international private sector claims)



Source: authors' calculation based on BIS data.

<sup>34</sup> See footnote 30.

<sup>35</sup> See footnote 30.

**Table 1: Impact of crises on the growth rate of real domestic and foreign credit**

This table reports the average growth of foreign and domestic credit during tranquil and crisis periods. T-tests are shown for the difference in average growth between these two periods. Tests reported are one-sided, where the null is:  $\text{mean}(\text{tranquil period}) - \text{mean}(\text{crisis period}) = 0$  and the alternative is:  $\text{mean}(\text{tranquil period}) - \text{mean}(\text{crisis period}) > 0$ . BIS 7 reflects the growth of lending by all 7 lenders combined. Real domestic credit refers to the growth of lending by all financial institutions operating in the 10 host countries.

Claims from:	Impact of host crises			Crises in other developing countries			
	Tranquil	Host crisis	Mean t-test (p-value)	Russian crisis	Mean t-test (p-value)	Asian crisis	Mean t-test (p-value)
BIS 7	11.14	2.05	1.95 (0.03)	29.57	-2.09 (0.98)	26.53	-1.61 (0.95)
Canada	25.49	8.96	0.81 (0.21)	132.44	-2.56 (0.99)	64.92	-0.85 (0.80)
France	3.19	-1.42	1.05 (0.15)	20.17	-2.05 (0.98)	13.12	-1.09 (0.86)
Germany	14.02	4.16	1.37 (0.09)	25.72	-0.81 (0.79)	40.26	-1.71 (0.96)
Japan	10.52	17.33	-0.61 (0.73)	37.01	-1.36 (0.91)	41.63	-1.48 (0.93)
Spain	28.64	20.10	0.63 (0.26)	35.93	-0.26 (0.60)	77.19	-1.61 (0.94)
UK	29.46	9.26	1.17 (0.12)	73.74	-1.77 (0.96)	24.62	0.19 (0.43)
US	12.31	3.01	1.37 (0.09)	31.16	-1.58 (0.94)	-1.11	1.04 (0.15)
Real domestic credit	10.67	-5.44	2.74 (0.01)	15.72	-0.49 (0.69)	17.01	-0.58 (0.72)

**Table 2: Comparing means and standard deviations of foreign vis-à-vis domestic credit**

This table reports the mean and standard deviation of the growth of foreign and domestic credit during the entire sample and during crisis periods. T-tests are shown for the difference in mean and standard deviation between BIS 7 and domestic credit. BIS 7 reflects the growth of lending by all 7 lenders combined. Real domestic credit refers to the growth of lending by all financial institutions operating in the 10 host countries.

	BIS-7 Real Claims		Real Domestic Credit		Difference Tests	
	Mean	Standard deviation	Mean	Standard deviation	Mean test statistic (p-value)	Standard deviation test statistic (p-value)
Host Crisis	2.05	20.79	-5.44	36.37	-1.13 (0.13)	3.16 (0.00)
Asian Crisis	26.53	30.09	17.01	11.28	-0.86 (0.21)	0.14 (0.98)
Russian Crisis	29.57	11.98	15.72	23.30	-1.43 (0.10)	3.78 (0.05)
1985-2000	8.58	25.41	6.15	32.67	-0.76 (0.45)	1.65 (0.00)

**Table 3: Unrestricted model of the determinants of foreign bank lending to Latin America**

This table presents the results of estimating equation (1) for the change in real private sector claims. Regression coefficients are allowed to be different across lenders.

Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Host real GDP growth $_{i,t-1} \times \text{Canada}$	0.561	0.14	(Local currency j / US\$ exchange rate) $_{t-1} \times \text{Japan}$	0.248	0.42
Host real GDP growth $_{i,t-1} \times \text{France}$	0.760	0.84	(Local currency j / US\$ exchange rate) $_{t-1} \times \text{Spain}$	0.951	0.87
Host real GDP growth $_{i,t-1} \times \text{Germany}$	1.101	0.72	(Local currency j / US\$ exchange rate) $_{t-1} \times \text{UK}$	6.953	1.15
Host real GDP growth $_{i,t-1} \times \text{Japan}$	2.316	2.00 **	Change in host rating $_{i,t-1} \times \text{Canada}$	2.852	1.20
Host real GDP growth $_{i,t-1} \times \text{Spain}$	4.203	1.93 *	Change in host rating $_{i,t-1} \times \text{France}$	-0.779	-2.39 **
Host real GDP growth $_{i,t-1} \times \text{UK}$	3.435	0.76	Change in host rating $_{i,t-1} \times \text{Germany}$	0.170	0.35
Host real GDP growth $_{i,t-1} \times \text{US}$	2.414	2.61 ***	Change in host rating $_{i,t-1} \times \text{Japan}$	1.537	2.27 **
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{Canada}$	-0.011	-0.02	Change in host rating $_{i,t-1} \times \text{Spain}$	1.207	1.12
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{France}$	-0.199	-0.88	Change in host rating $_{i,t-1} \times \text{UK}$	0.919	0.37
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{Germany}$	-0.112	-0.62	Change in host rating $_{i,t-1} \times \text{US}$	1.735	3.35 ***
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{Japan}$	-4.349	-2.43 **	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{Canada}$	-0.313	-1.16
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{Spain}$	-0.285	-1.22	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{France}$	0.224	2.54 **
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{UK}$	-0.599	-0.24	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{Germany}$	-0.009	-0.13
Host real GDP growth $_{i,t-1} \times \text{Exposure to } i \times \text{US}$	-0.160	-1.16	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{Japan}$	-0.127	-0.17
Home real GDP growth $_{j,t-1} \times \text{Canada}$	3.358	0.67	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{Spain}$	-0.172	-1.18
Home real GDP growth $_{j,t-1} \times \text{France}$	-4.572	-2.43 **	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{UK}$	-0.983	-0.61
Home real GDP growth $_{j,t-1} \times \text{Germany}$	-3.492	-1.31	Change in host rating $_{i,t-1} \times \text{Exposure to } i \times \text{US}$	-0.050	-0.82
Home real GDP growth $_{j,t-1} \times \text{Japan}$	5.725	1.87 *	Change in private real claims on all other countries $_{t-1} \times \text{Canada}$	1.632	1.95 *
Home real GDP growth $_{j,t-1} \times \text{Spain}$	-3.618	-0.65	Change in private real claims on all other countries $_{t-1} \times \text{France}$	-0.011	-0.03
Home real GDP growth $_{j,t-1} \times \text{UK}$	-17.058	-1.32	Change in private real claims on all other countries $_{t-1} \times \text{Germany}$	0.501	1.46
Home real GDP growth $_{j,t-1} \times \text{US}$	-5.564	-2.08 **	Change in private real claims on all other countries $_{t-1} \times \text{Japan}$	0.132	2.29 **
Home real Interest Rate $_{j,t-1} \times \text{Canada}$	-0.167	-0.03	Change in private real claims on all other countries $_{t-1} \times \text{Spain}$	-0.214	-0.68
Home real Interest Rate $_{j,t-1} \times \text{France}$	-0.188	-0.10	Change in private real claims on all other countries $_{t-1} \times \text{UK}$	2.048	1.43
Home real Interest Rate $_{j,t-1} \times \text{Germany}$	2.640	0.85	Change in private real claims on all other countries $_{t-1} \times \text{US}$	0.583	2.41 **
Home real Interest Rate $_{j,t-1} \times \text{Japan}$	-12.073	-2.16 **	Host crisis dummy $_{i,t-1} \times \text{Canada}$	9.459	0.48
Home real Interest Rate $_{j,t-1} \times \text{Spain}$	-1.263	-0.44	Host crisis dummy $_{i,t-1} \times \text{France}$	-6.435	-0.92
Home real Interest Rate $_{j,t-1} \times \text{UK}$	-16.455	-0.64	Host crisis dummy $_{i,t-1} \times \text{Germany}$	-6.303	-0.72
Home real Interest Rate $_{j,t-1} \times \text{US}$	-0.679	-0.19	Host crisis dummy $_{i,t-1} \times \text{Japan}$	5.304	0.26
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{Canada}$	-0.014	-0.25	Host crisis dummy $_{i,t-1} \times \text{Spain}$	16.369	0.79
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{France}$	-0.004	-0.15	Host crisis dummy $_{i,t-1} \times \text{UK}$	-38.074	-0.75
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{Germany}$	-0.009	-0.39	Host crisis dummy $_{i,t-1} \times \text{US}$	-15.390	-1.53
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{Japan}$	0.033	1.23	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{Canada}$	2.375	0.53
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{Spain}$	0.060	1.20	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{France}$	-1.605	-0.73
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{UK}$	-0.135	-0.40	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{Germany}$	-0.469	-0.36
(Local currency i / US\$ exchange rate) $_{t-1} \times \text{US}$	0.049	2.09 **	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{Japan}$	-4.761	-0.19
(Local currency j / US\$ exchange rate) $_{t-1} \times \text{Canada}$	-1.278	-0.51	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{Spain}$	0.017	0.00
(Local currency j / US\$ exchange rate) $_{t-1} \times \text{France}$	0.491	1.79 *	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{UK}$	12.441	0.35
(Local currency j / US\$ exchange rate) $_{t-1} \times \text{Germany}$	0.342	0.79	Host crisis dummy $_{i,t-1} \times \text{Exposure to } i \times \text{US}$	1.152	0.82
Number of observations	804				
Adjusted R-squared	0.11				

\*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively. Home and host dummies are included but not shown. t-statistics are calculated on the basis of robust standard errors.

**Table 4: F-tests for coefficient restrictions across home countries or lenders**

This table reports F-tests for different coefficient restrictions across home countries, based on the results presented in Table 3.

Restricted Coefficients	Unrestricted Coefficients	F-test of coefficient restrictions
<b>Model 4.1</b> Host real GDP growth $_{i,t-1}$ Host real GDP growth $_{i,t-1} \times$ Exposure to $i$ (Local currency $i$ / US\$ exchange rate) $_{t-1}$ Change in host rating $_{i,t-1}$ Change in host rating $_{i,t-1} \times$ Exposure to $i$ Host crisis dummy $_{i,t-1}$ Host crisis dummy $_{i,t-1} \times$ Exposure to $i$ Host dummies	Home real GDP growth $_{j,t-1}$ Home real Interest Rate $_{j,t-1}$ (Local currency $j$ / US\$ exchange rate) $_{t-1}$ Change in private real claims on all other countries $_{t-1}$ Home dummies	$F(96, 658) = 1.14$ $\text{Prob} > F = 0.1785$
<b>Model 4.2</b> Host real GDP growth $_{i,t-1}$ Host real GDP growth $_{i,t-1} \times$ Exposure to $i$ (Local currency $i$ / US\$ exchange rate) $_{t-1}$ Change in host rating $_{i,t-1}$ Change in host rating $_{i,t-1} \times$ Exposure to $i$ Host crisis dummy $_{i,t-1}$ Host crisis dummy $_{i,t-1} \times$ Exposure to $i$ Host dummies (Local currency $j$ / US\$ exchange rate) $_{t-1}$	Home real GDP growth $_{j,t-1}$ Home real Interest Rate $_{j,t-1}$ Change in private real claims on all other countries $_{t-1}$ Home dummies	$F(101, 658) = 1.10$ $\text{Prob} > F = 0.2559$
<b>Model 4.3</b> Host real GDP growth $_{i,t-1}$ Host real GDP growth $_{i,t-1} \times$ Exposure to $i$ (Local currency $i$ / US\$ exchange rate) $_{t-1}$ Change in host rating $_{i,t-1}$ Change in host rating $_{i,t-1} \times$ Exposure to $i$ Host crisis dummy $_{i,t-1}$ Host crisis dummy $_{i,t-1} \times$ Exposure to $i$ Host dummies (Local currency $j$ / US\$ exchange rate) $_{t-1}$ Change in private real claims on all other countries $_{t-1}$	Home real GDP growth $_{j,t-1}$ Home real Interest Rate $_{j,t-1}$ Home dummies	$F(107, 658) = 1.14$ $\text{Prob} > F = 0.1793$
<b>Model 4.4</b> Host real GDP growth $_{i,t-1}$ Host real GDP growth $_{i,t-1} \times$ Exposure to $i$ (Local currency $i$ / US\$ exchange rate) $_{t-1}$ Change in host rating $_{i,t-1}$ Change in host rating $_{i,t-1} \times$ Exposure to $i$ Host crisis dummy $_{i,t-1}$ Host crisis dummy $_{i,t-1} \times$ Exposure to $i$ Host dummies (Local currency $j$ / US\$ exchange rate) $_{t-1}$ Change in private real claims on all other countries $_{t-1}$ Home real Interest Rate $_{j,t-1}$	Home real GDP growth $_{j,t-1}$ Home dummies	$F(112, 658) = 1.20$ $\text{Prob} > F = 0.0916^*$

\*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively.



**Table 5: Restricted model for the determinants of foreign bank lending to Latin America**

This table reports the estimates from the selected model according to the F-tests reported in Table 4. Model (5.1) presents the results for the model estimated over the period 1985-2000. Model (5.2) refers to the results obtained for the pre-1995 period, while model (5.3) presents the estimates for the 1995-2000 subsample.

Variable	Model 5.1 Coefficient (t-statistic)	Model 5.2 Coefficient (t-statistic)	Model 5.3 Coefficient (t-statistic)
Host real GDP growth $i_{t-1}$	2.120 *** (2.900)	2.244 *** (2.990)	1.157 (0.730)
Host real GDP growth $i_{t-1} \times$ Exposure to i	-0.210 ** (-2.120)	-0.242 ** (-2.340)	0.050 (0.230)
Home real GDP growth $j_{t-1} \times$ Canada	8.544 ** (2.010)	1.942 (0.550)	-6.327 (-0.290)
Home real GDP growth $j_{t-1} \times$ France	-1.759 (-0.860)	-3.501 (-1.490)	-1.953 (-0.380)
Home real GDP growth $j_{t-1} \times$ Germany	-2.140 (-0.840)	-2.822 (-1.050)	-22.063 (-1.600)
Home real GDP growth $j_{t-1} \times$ Japan	5.370 * (1.670)	-0.809 (-0.250)	11.884 ** (2.460)
Home real GDP growth $j_{t-1} \times$ Spain	-4.815 (-0.720)	-2.185 (-0.300)	-4.579 (-0.280)
Home real GDP growth $j_{t-1} \times$ UK	-2.928 (-0.180)		-8.975 (-0.510)
Home real GDP growth $j_{t-1} \times$ US	-5.399 ** (-2.200)	-10.331 *** (-3.760)	-1.623 (-0.190)
Home real interest rate $j_{t-1} \times$ Canada	-15.551 *** (-3.520)	-7.299 * (-1.820)	-6.610 (-0.400)
Home real interest rate $j_{t-1} \times$ France	-0.204 (-0.130)	-1.631 (-0.410)	-11.591 * (-1.650)
Home real interest rate $j_{t-1} \times$ Germany	0.468 (0.170)	4.859 (1.230)	-7.393 (-0.400)
Home real interest rate $j_{t-1} \times$ Japan	-11.248 ** (-2.090)	-11.576 (-1.010)	-9.544 (-0.860)
Home real interest rate $j_{t-1} \times$ Spain	-0.458 (-0.180)	1.160 (0.460)	55.259 *** (2.660)
Home real interest rate $j_{t-1} \times$ UK	17.733 (1.070)		17.890 (0.940)
Home real interest rate $j_{t-1} \times$ US	-7.122 *** (-2.740)	-8.053 *** (-3.030)	1.028 (0.110)
(Local currency i / US\$ exchange rate) $_{t-1}$	0.010 (0.730)	0.023 (1.590)	-0.152 (-1.230)
(Local currency j / US\$ exchange rate) $_{t-1}$	0.393 (1.380)	0.768 ** (2.150)	-0.714 (-0.810)
Change in host rating $i_{t-1}$	1.142 ** (2.460)	0.062 (0.210)	2.279 * (1.960)
Change in host rating $i_{t-1} \times$ Exposure to i	-0.093 (-1.490)	0.029 (0.560)	-0.380 ** (-2.150)
Change in private real claims on all other countries $_{t-1}$	0.146 *** (3.130)	0.130 ** (2.200)	0.347 (0.680)
Host crisis dummy $i_{t-1}$	-3.409 (-0.640)	-6.855 (-1.190)	-0.639 (-0.060)
Host crisis dummy $i_{t-1} \times$ Exposure to i	0.760 (0.660)	0.013 (0.010)	0.349 (0.180)
Number of observations	804	426	378
Adjusted R-squared	0.13	0.10	0.19

t-statistics are in parentheses (calculated on the basis of robust standard errors). \*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively. Home dummies are included, but not shown. UK is omitted in Model (5.2), because data on private sector claims is not available for the UK prior to 1993.

**Table 6: The impact of positive and negative shocks on foreign bank lending to Latin America**

This table presents the results from a model where the impact of host GDP changes, rating changes, and changes in all other claims is allowed to vary depending on the positive or negative nature of the shocks.

Variable	Coefficient	t-statistic
Positive host real GDP growth $i_{t-1}$	1.679	1.68 *
Negative host real GDP growth $i_{t-1}$	-2.179	-1.59
Positive host real GDP growth $i_{t-1} \times \text{Exposure to } i$	-0.016	-0.13
Negative host real GDP growth $i_{t-1} \times \text{Exposure to } i$	0.358	1.46
Home real GDP growth $j_{t-1} \times \text{Canada}$	8.894	2.04 **
Home real GDP growth $j_{t-1} \times \text{France}$	-2.291	-1.09
Home real GDP growth $j_{t-1} \times \text{Germany}$	-2.140	-0.86
Home real GDP growth $j_{t-1} \times \text{Japan}$	5.483	1.69 *
Home real GDP growth $j_{t-1} \times \text{Spain}$	-5.889	-0.87
Home real GDP growth $j_{t-1} \times \text{UK}$	-1.136	-0.07
Home real GDP growth $j_{t-1} \times \text{US}$	-4.618	-1.87 *
Home real interest rate $j_{t-1} \times \text{Canada}$	-14.433	-3.14 ***
Home real interest rate $j_{t-1} \times \text{France}$	-0.118	-0.07
Home real interest rate $j_{t-1} \times \text{Germany}$	-0.333	-0.12
Home real interest rate $j_{t-1} \times \text{Japan}$	-13.031	-2.43 **
Home real interest rate $j_{t-1} \times \text{Spain}$	-0.110	-0.04
Home real interest rate $j_{t-1} \times \text{UK}$	21.010	1.20
Home real interest rate $j_{t-1} \times \text{US}$	-5.372	-1.77 *
(Local currency $i$ / US\$ exchange rate) $t-1$	0.017	1.24
(Local currency $j$ / US\$ exchange rate) $t-1$	0.412	1.45
Host rating Upgrade $i_{t-1}$	1.665	1.88 *
Host rating Downgrade $i_{t-1}$	-0.036	-0.06
Host rating Upgrade $i_{t-1} \times \text{Exposure to } i$	-0.245	-2.53 **
Host rating Downgrade $i_{t-1} \times \text{Exposure to } i$	-0.117	-2.11 **
Increase in private real claims on all other countries $t-1$	0.133	2.79 ***
Decrease in private real claims on all other countries $t-1$	-0.922	-1.99 **
Host crisis dummy $i_{t-1}$	-5.385	-0.92
Host crisis dummy $i_{t-1} \times \text{Exposure to } i$	1.100	0.87
Number of observations	804	
Adjusted R-squared	0.13	

\*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively. t-statistics are obtained on the basis of robust standard errors. Home dummies are included, but not shown. Growth rates and changes in ratings and claims are expressed in terms of absolute values.

**Table 7: Percentage of variance of foreign bank lending explained by home, host, and portfolio shocks**

This table reports the percentage of the variance in foreign bank lending that can be explained by home, host, and portfolio shocks. The percent variance explained is calculated as  $(R2_{full} - R2_{constrained}) / R2_{full} * 100$ . The home country variables included are real GDP growth, real interest rates, and the home/dollar exchange rate. Host country variables included are: real GDP growth, credit rating, the host/dollar exchange rate, and the crisis dummy. Positive changes refer to credit rating upgrades, host positive real GDP growth, and increases in all other claims. Negative changes refer to credit rating downgrades, host negative real GDP growth, and decreases in all other claims. We re-scale the percent of the variance explained by each set of variables so that for a given estimation the sum of all three groups adds to 100

	Home Country Variables	Host Country Variables	Change in all other claims
Entire Sample	46.78	31.41	21.81
Positive changes	59.45 <sup>a</sup>	28.43	6.39
Negative changes		1.69	4.03
1985-1994	61.63	17.76	20.61
1995-2000	49.56	48.59	1.85

<sup>a</sup> We are unable to split home variables into positive and negative sub-samples since between 1985-2000 there are no periods when home variables take negative values. So essentially the negative/positive estimation corresponds to one where all variables (host and all other claims) except for the home variables are split into positive and negative changes (see Table 6).

**Table A.1: Crises classification: banking, currency, and twin crises in the 10 Latin American countries, 1985-2000**

Host Country	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Argentina			CC		BC, CC	BC	CC				BC,CC					
Brazil			CC			BC, CC				BC	BC	BC			CC	
Chile																
Colombia	BC	BC	BC											BC,CC		
Costa Rica			BC							BC	BC	BC	BC			
Ecuador				CC			CC					BC	BC	BC	BC,CC	BC
México					CC					BC,CC	BC, CC	BC				
Peru	BC	BC	BC	BC,CC		BC, CC		CC								
Uruguay	CC															
Venezuela	BC	BC, CC			CC					BC,CC	BC,CC	BC	BC			

Note: BC denotes banking crises, while CC denotes currency crises.

Banking crises: chronology follows Caprio & Klingebiel (1999), which documents episodes where much or all of bank capital was exhausted.

Currency crises: include episodes of forced changes in parity, abandonment of fixed exchange rate regimes, and those episodes identified by an index of exchange market pressure. The index is a standard deviation weighted average of exchange rate changes, short-term interest rate changes and reserve changes. A currency crisis is recorded when the index exceeds the critical threshold of 1.5 standard deviations above its mean.

Twin crises: refers to episodes when banking and currency crises occur simultaneously.

**Table A.2: Impact of crises on the growth rate of real domestic and foreign credit, by type of crisis and by lender**

This table reports the average growth of foreign and domestic credit during tranquil and crisis periods. In particular, we distinguish between banking, currency, and twin crises. T-tests are shown for the difference in average growth between these two periods. Tests reported are one-sided, where the null is:  $\text{mean}(\text{tranquil period}) - \text{mean}(\text{crisis period}) = 0$  and the alternative is:  $\text{mean}(\text{tranquil}) - \text{mean}(\text{crisis}) > 0$ . BIS 7 reflects the growth of lending by all 7 lenders combined. Real domestic credit refers to the growth of lending by all financial institutions operating in the 10 host countries.

Claims from:	Tranquil Period	All Host Crises		Host Banking Crises		Host Currency Crises		Host Twin Crises	
		Host Crisis	Mean t-test (p-values)	Host Crisis	Mean t-test (p-values)	Host Crisis	Mean t-test (p-values)	Host Crisis	Mean t-test (p-values)
BIS-7	11.14	2.05	1.95 (0.03)	12.80	-0.18 (0.57)	-9.97	2.19 (0.02)	2.02	1.58 (0.06)
Canada	25.49	8.96	0.81 (0.21)	26.38	-0.02 (0.51)	-12.15	0.84 (0.20)	8.74	0.63 (0.26)
France	3.19	-1.42	1.05 (0.15)	-4.09	0.92 (0.18)	-9.22	1.39 (0.08)	2.39	0.14 (0.44)
Germany	14.02	4.16	1.37 (0.09)	4.52	0.70 (0.24)	-4.87	1.25 (0.11)	7.01	0.78 (0.22)
Japan	10.52	17.33	-0.61 (0.73)	49.76	-1.91 (0.97)	-2.81	0.65 (0.26)	9.18	0.11 (0.46)
Spain	28.64	20.10	0.63 (0.26)	49.33	-0.79 (0.79)	-3.68	1.09 (0.14)	14.63	0.81 (0.21)
UK	29.46	9.26	1.17 (0.12)	15.48	0.45 (0.33)	-24.51		8.99	0.98 (0.17)
US	12.31	3.01	1.37 (0.09)	20.01	-0.64 (0.74)	1.10	0.84 (0.20)	-4.14	2.12 (0.02)
Real domestic credit	10.67	-5.44	2.74 (0.01)	-5.15	1.55 (0.06)	-2.55	1.13 (0.13)	-6.51	2.42 (0.01)

Note: no means test can be performed for the UK for currency crises, because there is only 1 observation post 1993.

**Table A.3: Comparing means and standard deviations of foreign vis-à-vis domestic credit, by type of crisis**

This table reports the mean and standard deviation growth of foreign and domestic credit during crisis periods. In particular, we distinguish between banking, currency, and twin crises. T-tests are shown for the difference in mean and standard deviation between BIS 7 and domestic credit. BIS 7 reflects the growth of lending by all 7 lenders combined. Real domestic credit refers to the growth of lending by all financial institutions operating in the 10 host countries.

	All Host Crises		Host Banking Crises		Host Currency Crises		Host Twin Crises	
	Mean <sup>a</sup>	Std Dev <sup>b</sup>	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Real domestic credit	-5.44	36.37	-5.15	18.64	-2.55	52.77	-6.51	36.44
Real BIS-7 Claims	2.05	20.79	12.80	25.68	-9.97	14.33	2.02	18.53
Test Statistic	-1.13	3.16	-1.43	0.53	0.40	13.57	-1.02	3.87
P-value	(0.13)	(0.00)	(0.10)	(0.81)	(0.35)	(0.00)	(0.16)	(0.00)

<sup>a</sup>Null hypothesis:  $\text{Mean}(\text{Dom Credit}) - \text{Mean}(\text{BIS-7}) = 0$ ; Alternative hypothesis:  $\text{Mean}(\text{Dom Credit}) - \text{Mean}(\text{BIS-7}) < 0$

<sup>b</sup>Null hypothesis:  $\text{sd}(\text{Dom Credit}) = \text{sd}(\text{BIS-7})$ ; Alternative hypothesis:  $\text{sd}(\text{Dom Credit}) > \text{sd}(\text{BIS-7})$

**Table A.4: Claims from 7 home countries as a share of domestic credit to private sector in the 10 host countries in Latin America, 1985-2000 average**

	Argentina	Brazil	Chile	Colombia	Costa Rica	Ecuador	Mexico	Peru	Uruguay	Venezuela
Canada	1.05	0.45	0.70	0.62	2.59	0.17	2.20	0.62	0.14	1.47
France	5.15	3.56	2.23	6.17	1.50	2.91	11.28	11.21	1.62	15.36
Germany	5.75	2.43	3.07	4.30	5.32	2.33	4.34	2.69	3.47	7.18
Japan	2.09	1.03	1.20	1.83	1.33	1.33	3.38	1.79	0.15	2.22
Spain	4.76	0.33	3.91	3.80	3.54	1.22	2.29	7.13	5.39	2.95
UK	2.29	0.62	0.70	2.35	0.43	1.29	1.45	1.32	1.77	3.16
US	9.42	2.84	5.95	7.23	4.45	6.67	14.63	5.41	4.30	12.73
All 7 lenders	30.51	11.26	17.76	26.31	19.18	15.93	39.57	30.16	16.85	45.07

**Table A.5: Claims from 7 home countries as a share of all BIS claims on the 10 host countries in Latin America, 1985-2000 average**

	Argentina	Brazil	Chile	Colombia	Costa Rica	Ecuador	Mexico	Peru	Uruguay	Venezuela
Canada	2.19	2.80	2.32	1.76	9.51	0.64	3.01	1.36	0.46	2.49
France	13.17	22.31	9.63	19.20	7.29	12.35	17.26	27.54	6.97	25.59
Germany	14.29	15.02	12.72	12.49	16.38	10.27	6.85	7.06	10.52	11.52
Japan	5.46	6.94	5.27	5.09	5.56	5.25	5.77	3.02	0.67	3.73
Spain	10.13	2.14	16.18	8.96	15.32	4.87	5.10	17.74	20.82	4.57
UK	4.42	4.63	2.42	6.57	1.28	6.38	3.71	3.72	5.20	4.26
US	23.13	17.78	28.39	20.78	19.35	31.04	23.43	12.39	15.01	20.73
All 7 lenders	72.79	71.62	76.94	74.86	74.69	70.79	65.13	72.83	59.65	72.90

**Table A.6: Restricted model for the determinants of foreign bank lending to Latin America, allowing crises to affect lending contemporaneously**

Model (A.6.1) presents the results for the model estimated over the period 1985-2000. Model (A.6.2) refers to the results obtained for the pre-1995 period, while model (A.6.3) presents the estimates for the 1995-2000 subsample.

Variable	Model A.6.1 Coefficient (t-statistic)	Model A.6.2 Coefficient (t-statistic)	Model A.6.3 Coefficient (t-statistic)
Host real GDP growth $i_{t-1}$	2.014 *** (2.760)	2.289 *** (3.080)	1.119 (0.670)
Host real GDP growth $i_{t-1} \times$ Exposure to i	-0.209 * (-1.920)	-0.318 *** (-3.080)	0.076 (0.350)
Home real GDP growth $j_{t-1} \times$ Canada	7.393 * (1.810)	0.327 (0.090)	-7.220 (-0.330)
Home real GDP growth $j_{t-1} \times$ France	-2.742 (-1.350)	-3.576 (-1.550)	-2.511 (-0.540)
Home real GDP growth $j_{t-1} \times$ Germany	-2.578 (-1.030)	-3.550 (-1.270)	-22.124 * (-1.680)
Home real GDP growth $j_{t-1} \times$ Japan	5.413 (1.570)	-0.939 (-0.260)	11.878 ** (2.450)
Home real GDP growth $j_{t-1} \times$ Spain	-4.248 (-0.610)	-1.030 (-0.140)	-3.163 (-0.190)
Home real GDP growth $j_{t-1} \times$ UK	-1.983 (-0.120)		-7.468 (-0.420)
Home real GDP growth $j_{t-1} \times$ US	-6.497 *** (-2.630)	-11.851 *** (-4.070)	-1.333 (-0.170)
Home real interest rate $j_{t-1} \times$ Canada	-13.977 *** (-3.410)	-6.095 * (-1.670)	-5.679 (-0.340)
Home real interest rate $j_{t-1} \times$ France	0.064 (0.040)	0.509 (0.140)	-10.930 * (-1.650)
Home real interest rate $j_{t-1} \times$ Germany	0.866 (0.310)	6.292 (1.370)	-6.595 (-0.360)
Home real interest rate $j_{t-1} \times$ Japan	-11.447 ** (-2.130)	-12.116 (-1.060)	-7.748 (-0.720)
Home real interest rate $j_{t-1} \times$ Spain	-0.208 (-0.080)	1.165 (0.440)	57.405 *** (2.860)
Home real interest rate $j_{t-1} \times$ UK	15.890 (0.960)		14.301 (0.740)
Home real interest rate $j_{t-1} \times$ US	-6.037 ** (-2.290)	-7.189 *** (-2.630)	2.733 (0.290)
(Local currency i / US\$ exchange rate) $t-1$	0.003 (1.330)	0.002 (1.190)	-0.002 (-0.250)
(Local currency j / US\$ exchange rate) $t-1$	0.387 (1.370)	0.833 ** (2.390)	-0.707 (-0.800)
Change in host rating $i_{t-1}$	1.112 ** (2.390)	0.014 (0.050)	2.356 ** (2.100)
Change in host rating $i_{t-1} \times$ Exposure to i	-0.112 * (-1.700)	0.023 (0.410)	-0.421 ** (-2.270)
Change in private real claims on all other countries $t-1$	0.155 *** (3.290)	0.141 ** (2.400)	0.401 (0.790)
Host crisis dummy $i_t$	-4.817 (-0.860)	-3.684 (-0.650)	-13.423 (-1.300)
Host crisis dummy $i_t \times$ Exposure to i	1.457 * (1.800)	2.705 *** (2.910)	2.372 (1.490)
Number of observations	805	420	385
R-squared	0.1599	0.1516	0.2591

t-statistics are in parentheses (calculated on the basis of robust standard errors). \*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively. Home dummies are included, but not shown. UK is omitted in Model (A.6.2), because data on private sector claims is not available for the UK prior to 1993.

**Table A.7: Restricted model for the determinants of foreign bank lending to Latin America, discriminating between banking, currency, and twin crises, 1985-2000**

	Including lagged crisis dummies		Including contemporaneous crisis dummies	
	With Brazilian Crisis (1999)	Without Brazilian Crisis (1999)	With Brazilian Crisis (1999)	Without Brazilian Crisis (1999)
Host real GDP growth $_{i,t-1}$	2.102 *** (2.830)	2.107 *** (2.840)	1.891 ** (2.400)	1.928 ** (2.460)
Host real GDP growth $_{i,t-1} \times$ Exposure to i	-0.224 ** (-2.270)	-0.222 ** (-2.270)	-0.156 (-1.270)	-0.158 (-1.280)
Home real GDP growth $_{j,t-1} \times$ Canada	8.417 ** (1.980)	8.370 ** (1.970)	8.065 * (1.830)	8.082 * (1.830)
Home real GDP growth $_{j,t-1} \times$ France	-1.135 (-0.550)	-1.120 (-0.540)	-2.368 (-1.120)	-2.430 (-1.150)
Home real GDP growth $_{j,t-1} \times$ Germany	-1.857 (-0.730)	-1.874 (-0.740)	-2.163 (-0.800)	-2.231 (-0.830)
Home real GDP growth $_{j,t-1} \times$ Japan	5.184 * (1.680)	5.203 * (1.690)	5.382 (1.620)	5.413 (1.630)
Home real GDP growth $_{j,t-1} \times$ Spain	-4.284 (-0.630)	-4.269 (-0.620)	-4.081 (-0.580)	-4.123 (-0.590)
Home real GDP growth $_{j,t-1} \times$ UK	-3.623 (-0.220)	-3.207 (-0.200)	-1.662 (-0.100)	-1.845 (-0.110)
Home real GDP growth $_{j,t-1} \times$ US	-5.540 ** (-2.280)	-5.547 ** (-2.280)	-6.384 ** (-2.400)	-6.356 ** (-2.400)
Home real interest rate $_{j,t-1} \times$ Canada	-15.124 *** (-3.380)	-15.068 *** (-3.360)	-15.010 *** (-3.400)	-15.071 *** (-3.410)
Home real interest rate $_{j,t-1} \times$ France	0.250 (0.150)	0.243 (0.150)	0.343 (0.210)	0.350 (0.210)
Home real interest rate $_{j,t-1} \times$ Germany	0.561 (0.200)	0.558 (0.200)	1.355 (0.460)	1.411 (0.480)
Home real interest rate $_{j,t-1} \times$ Japan	-10.527 ** (-2.020)	-10.515 ** (-2.020)	-10.536 * (-1.960)	-10.560 ** (-1.960)
Home real interest rate $_{j,t-1} \times$ Spain	-0.146 (-0.060)	-0.149 (-0.060)	-0.153 (-0.060)	-0.128 (-0.050)
Home real interest rate $_{j,t-1} \times$ UK	17.031 (1.010)	17.136 (1.010)	17.761 (1.070)	17.501 (1.050)
Home real interest rate $_{j,t-1} \times$ US	-6.867 ** (-2.540)	-6.828 ** (-2.530)	-6.116 *** (-2.190)	-6.186 ** (-2.210)
(Local currency i / US\$ exchange rate) $_{t-1}$	0.013 (0.880)	0.013 (0.890)	-0.031 (-1.300)	-0.032 (-1.320)
(Local currency j / US\$ exchange rate) $_{t-1}$	0.391 (1.330)	0.392 (1.330)	0.422 (1.370)	0.424 (1.370)
Change in host rating $_{i,t-1}$	1.144 ** (2.330)	1.151 ** (2.340)	1.089 ** (2.180)	1.096 ** (2.190)
Change in host rating $_{i,t-1} \times$ Exposure to i	-0.078 (-1.200)	-0.077 (-1.190)	-0.125 * (-1.770)	-0.125 * (-1.770)
Change in private real claims on all other countries $_{t-1}$	0.137 *** (2.940)	0.137 *** (2.950)	0.150 *** (3.200)	0.149 *** (3.180)
Host banking crisis dummy	5.845 (0.580)	6.017 (0.600)	1.616 (0.120)	1.864 (0.140)
Host banking crisis dummy $\times$ Exposure to i	-2.474 (-0.910)	-2.494 (-0.920)	5.139 (1.220)	5.138 (1.220)
Host currency crisis dummy	-16.337 * (-1.720)	-14.732 (-1.450)	-10.483 (-1.610)	-7.667 (-1.130)
Host currency crisis dummy $\times$ Exposure to i	0.841 (0.660)	0.565 (0.430)	0.763 (0.690)	0.639 (0.560)
Host twin crisis dummy	-4.424 (-0.620)	-4.174 (-0.580)	-7.399 (-1.220)	-7.016 (-1.170)
Host twin crisis dummy $\times$ Exposure to i	1.965 (1.000)	1.949 (0.990)	1.932 * (1.680)	1.919 * (1.670)
Number of Observations	804	804	780	780
R-Squared	0.1662	0.1658	0.165	0.1646

t-statistics are in parentheses (calculated on the basis of robust standard errors). \*, \*\*, \*\*\* denote significance at 10, 5, and 1 percent, respectively.





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